

In the Claims:

1. (Canceled)
2. (Previously Presented) The transceiver of claim 4, wherein the sub-sequences are specified in the time domain.
3. (Canceled)
4. (Currently Amended) A transceiver for a wireless communications system ~~comprising a transmitter configured to generate a preamble~~ comprising:
a transmitter comprising preamble transmission circuitry;
a memory storing the preamble, the preamble comprising
a first sequence wherein the first sequence comprises a concatenation of a first set of sub-sequences, with each sub-sequence containing a specified number of zeroes, and wherein each sub-sequence can differ depending upon its position in the preamble; and
a second sequence wherein the second sequence comprises a concatenation of a second set of sub-sequences, wherein the second set of sub-sequences differ from the first set of sub-sequences, wherein the second sequence comprises a concatenation of multiple copies of a frequency domain sequence.
5. (Previously Presented) The transceiver of claim 4, wherein the frequency domain sequence is converted into a time domain sequence prior to use in creating the second sequence.
6. (Previously Presented) The transceiver of claim 5, wherein the second sequence comprises six (6) copies of the time domain sequence version of the frequency domain sequence.

7. (Previously Presented) The transceiver of claim 4, wherein the frequency domain sequence specifies Tone Number and Value as follows:

Tone Number	Value	Tone Number	Value	Tone Number	Value	Tone Number	Value
-56	$(1-j)/\sqrt{2}$	-28	$(1-j)/\sqrt{2}$	1	$(1+j)/\sqrt{2}$	29	$(1+j)/\sqrt{2}$
-55	$(-1+j)/\sqrt{2}$	-27	$(1-j)/\sqrt{2}$	2	$-(1+j)/\sqrt{2}$	30	$-(1+j)/\sqrt{2}$
-54	$(-1+j)/\sqrt{2}$	-26	$(-1+j)/\sqrt{2}$	3	$(1+j)/\sqrt{2}$	31	$-(1+j)/\sqrt{2}$
-53	$(1-j)/\sqrt{2}$	-25	$(-1+j)/\sqrt{2}$	4	$-(1+j)/\sqrt{2}$	32	$(1+j)/\sqrt{2}$
-52	$(1-j)/\sqrt{2}$	-24	$(-1+j)/\sqrt{2}$	5	$-(1+j)/\sqrt{2}$	33	$-(1+j)/\sqrt{2}$
-51	$(1-j)/\sqrt{2}$	-23	$(1-j)/\sqrt{2}$	6	$-(1+j)/\sqrt{2}$	34	$-(1+j)/\sqrt{2}$
-50	$(-1+j)/\sqrt{2}$	-22	$(-1+j)/\sqrt{2}$	7	$-(1+j)/\sqrt{2}$	35	$-(1+j)/\sqrt{2}$
-49	$(1-j)/\sqrt{2}$	-21	$(-1+j)/\sqrt{2}$	8	$-(1+j)/\sqrt{2}$	36	$(1+j)/\sqrt{2}$
-48	$(-1+j)/\sqrt{2}$	-20	$(1-j)/\sqrt{2}$	9	$(1+j)/\sqrt{2}$	37	$-(1+j)/\sqrt{2}$
-47	$(-1+j)/\sqrt{2}$	-19	$(-1+j)/\sqrt{2}$	10	$(1+j)/\sqrt{2}$	38	$(1+j)/\sqrt{2}$
-46	$(-1+j)/\sqrt{2}$	-18	$(-1+j)/\sqrt{2}$	11	$(1+j)/\sqrt{2}$	39	$-(1+j)/\sqrt{2}$
-45	$(1-j)/\sqrt{2}$	-17	$(-1+j)/\sqrt{2}$	12	$-(1+j)/\sqrt{2}$	40	$-(1+j)/\sqrt{2}$
-44	$(-1+j)/\sqrt{2}$	-16	$(-1+j)/\sqrt{2}$	13	$(1+j)/\sqrt{2}$	41	$-(1+j)/\sqrt{2}$
-43	$(-1+j)/\sqrt{2}$	-15	$(1-j)/\sqrt{2}$	14	$-(1+j)/\sqrt{2}$	42	$-(1+j)/\sqrt{2}$
-42	$(-1+j)/\sqrt{2}$	-14	$(-1+j)/\sqrt{2}$	15	$(1+j)/\sqrt{2}$	43	$-(1+j)/\sqrt{2}$
-41	$(-1+j)/\sqrt{2}$	-13	$(1-j)/\sqrt{2}$	16	$-(1+j)/\sqrt{2}$	44	$-(1+j)/\sqrt{2}$
-40	$(-1+j)/\sqrt{2}$	-12	$(-1+j)/\sqrt{2}$	17	$-(1+j)/\sqrt{2}$	45	$(1+j)/\sqrt{2}$
-39	$(-1+j)/\sqrt{2}$	-11	$(1-j)/\sqrt{2}$	18	$-(1+j)/\sqrt{2}$	46	$-(1+j)/\sqrt{2}$
-38	$(1-j)/\sqrt{2}$	-10	$(1-j)/\sqrt{2}$	19	$-(1+j)/\sqrt{2}$	47	$-(1+j)/\sqrt{2}$
-37	$(-1+j)/\sqrt{2}$	-9	$(1-j)/\sqrt{2}$	20	$(1+j)/\sqrt{2}$	48	$-(1+j)/\sqrt{2}$
-36	$(1-j)/\sqrt{2}$	-8	$(-1+j)/\sqrt{2}$	21	$-(1+j)/\sqrt{2}$	49	$(1+j)/\sqrt{2}$
-35	$(-1+j)/\sqrt{2}$	-7	$(-1+j)/\sqrt{2}$	22	$-(1+j)/\sqrt{2}$	50	$-(1+j)/\sqrt{2}$
-34	$(-1+j)/\sqrt{2}$	-6	$(-1+j)/\sqrt{2}$	23	$(1+j)/\sqrt{2}$	51	$(1+j)/\sqrt{2}$
-33	$(-1+j)/\sqrt{2}$	-5	$(-1+j)/\sqrt{2}$	24	$-(1+j)/\sqrt{2}$	52	$(1+j)/\sqrt{2}$
-32	$(1-j)/\sqrt{2}$	-4	$(-1+j)/\sqrt{2}$	25	$-(1+j)/\sqrt{2}$	53	$(1+j)/\sqrt{2}$
-31	$(-1+j)/\sqrt{2}$	-3	$(1-j)/\sqrt{2}$	26	$-(1+j)/\sqrt{2}$	54	$-(1+j)/\sqrt{2}$
-30	$(-1+j)/\sqrt{2}$	-2	$(-1+j)/\sqrt{2}$	27	$(1+j)/\sqrt{2}$	55	$-(1+j)/\sqrt{2}$

-29	$(1-j)/\sqrt{2}$	-1	$(1-j)/\sqrt{2}$	28	$(1+j)/\sqrt{2}$	56	$(1+j)/\sqrt{2}$
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8. (Previously Presented) The transceiver of claim 4, wherein the frequency domain sequence specifies Tone Number and Value as follows:

Tone Number	Value	Tone Number	Value	Tone Number	Value	Tone Number	Value
-56	1	-28	1	1	1	29	1
-55	-1	-27	-1	2	1	30	1
-54	-1	-26	1	3	1	31	1
-53	1	-25	1	4	1	32	1
-52	-1	-24	1	5	1	33	-1
-51	-1	-23	-1	6	-1	34	-1
-50	1	-22	1	7	-1	35	-1
-49	1	-21	-1	8	1	36	1
-48	-1	-20	1	9	1	37	-1
-47	1	-19	-1	10	1	38	-1
-46	-1	-18	-1	11	-1	39	-1
-45	-1	-17	1	12	1	40	1
-44	-1	-16	-1	13	1	41	1
-43	1	-15	-1	14	-1	42	-1
-42	-1	-14	-1	15	-1	43	1
-41	1	-13	1	16	-1	44	-1
-40	1	-12	1	17	1	45	-1
-39	-1	-11	-1	18	-1	46	-1
-38	-1	-10	1	19	-1	47	1
-37	-1	-9	1	20	1	48	-1
-36	1	-8	1	21	-1	49	1
-35	-1	-7	-1	22	1	50	1
-34	-1	-6	-1	23	-1	51	-1
-33	-1	-5	1	24	1	52	-1
-32	1	-4	1	25	1	53	1
-31	1	-3	1	26	1	54	-1
-30	1	-2	1	27	-1	55	-1
-29	1	-1	1	28	1	56	1

9. (Currently Amended) A transceiver for a wireless communications system comprising a transmitter configured to generate a preamble comprising;

a transmitter comprising preamble transmission circuitry;

a memory storing the preamble, the preamble comprising a first sequence wherein the first sequence comprises a concatenation of a first set of sub-sequences, with each sub-sequence containing more than one zero, and wherein each sub-sequence differs depending upon its position in the preamble and wherein the first sequence ~~comprises~~: comprises

a third sequence wherein the third sequence comprises a concatenation of multiple copies of a first sub-sequence; and

a fourth sequence wherein the fourth sequence comprises a concatenation of multiple copies of a fifth sequence comprising 180-degree rotations of each member of the first sub-sequence.

10. (Previously Presented) The transceiver of claim 9, wherein the first sub-sequence is a hierarchical sequence.

11. (Previously Presented) The transceiver of claim 10, wherein the first sub-sequence is created by spreading a first hierarchical sequence with a second hierarchical sequence, wherein the two hierarchical sequences are shorter than the first sub-sequence.

12. (Previously Presented) The transceiver of claim 11, wherein the first hierarchical sequence is a sequence selected from:

Sequence																
#1	1	1	1	1	-1	-1	1	1	-1	-1	1	-1	1	-1	1	1
#2	1	-1	-1	-1	-1	-1	1	-1	1	-1	-1	1	1	-1	-1	1
#3	1	1	-1	-1	-1	1	-1	-1	-1	1	-1	-1	1	-1	1	1
#4	1	-1	-1	1	-1	1	-1	-1	1	1	-1	-1	-1	-1	-1	1

13. (Previously Presented) The transceiver of claim 11, wherein the second hierarchical sequence is a sequence selected from:

Sequence								
#1	1	-1	-1	-1	1	1	-1	1
#2	1	-1	1	1	-1	-1	-1	1
#3	1	1	-1	1	1	-1	-1	-1
#4	1	1	1	-1	-1	1	-1	-1

14. (Previously Presented) The transceiver of claim 11, wherein the time domain sequence specifies Sequence Element and Value as follows:

Sequence Element	Value	Sequence Element	Value	Sequence Element	Value	Sequence Element	Value
C ₀	1	C ₃₂	-1	C ₆₄	-1	C ₉₆	1
C ₁	-1	C ₃₃	1	C ₆₅	1	C ₉₇	-1
C ₂	-1	C ₃₄	1	C ₆₆	1	C ₉₈	-1
C ₃	-1	C ₃₅	1	C ₆₇	1	C ₉₉	-1
C ₄	1	C ₃₆	-1	C ₆₈	-1	C ₁₀₀	1
C ₅	1	C ₃₇	-1	C ₆₉	-1	C ₁₀₁	1
C ₆	-1	C ₃₈	1	C ₇₀	1	C ₁₀₂	-1
C ₇	1	C ₃₉	-1	C ₇₁	-1	C ₁₀₃	1
C ₈	1	C ₄₀	-1	C ₇₂	-1	C ₁₀₄	-1
C ₉	-1	C ₄₁	1	C ₇₃	1	C ₁₀₅	1
C ₁₀	-1	C ₄₂	1	C ₇₄	1	C ₁₀₆	1
C ₁₁	-1	C ₄₃	1	C ₇₅	1	C ₁₀₇	1
C ₁₂	1	C ₄₄	-1	C ₇₆	-1	C ₁₀₈	-1
C ₁₃	1	C ₄₅	-1	C ₇₇	-1	C ₁₀₉	-1
C ₁₄	-1	C ₄₆	1	C ₇₈	1	C ₁₁₀	1
C ₁₅	1	C ₄₇	-1	C ₇₉	-1	C ₁₁₁	-1
C ₁₆	1	C ₄₈	1	C ₈₀	1	C ₁₁₂	1
C ₁₇	-1	C ₄₉	-1	C ₈₁	-1	C ₁₁₃	-1
C ₁₈	-1	C ₅₀	-1	C ₈₂	-1	C ₁₁₄	-1
C ₁₉	-1	C ₅₁	-1	C ₈₃	-1	C ₁₁₅	-1
C ₂₀	1	C ₅₂	1	C ₈₄	1	C ₁₁₆	1
C ₂₁	1	C ₅₃	1	C ₈₅	1	C ₁₁₇	1
C ₂₂	-1	C ₅₄	-1	C ₈₆	-1	C ₁₁₈	-1

C ₂₃	1	C ₅₅	1	C ₈₇	1	C ₁₁₉	1
C ₂₄	1	C ₅₆	1	C ₈₈	-1	C ₁₂₀	1
C ₂₅	-1	C ₅₇	-1	C ₈₉	1	C ₁₂₁	-1
C ₂₆	-1	C ₅₈	-1	C ₉₀	1	C ₁₂₂	-1
C ₂₇	-1	C ₅₉	-1	C ₉₁	1	C ₁₂₃	-1
C ₂₈	1	C ₆₀	1	C ₉₂	-1	C ₁₂₄	1
C ₂₉	1	C ₆₁	1	C ₉₃	-1	C ₁₂₅	1
C ₃₀	-1	C ₆₂	-1	C ₉₄	1	C ₁₂₆	-1
C ₃₁	1	C ₆₃	1	C ₉₅	-1	C ₁₂₇	1

15. (Previously Presented) The transceiver of claim 11, wherein the time domain sequence specifies Sequence Element and Value as follows:

Sequence Element	Value	Sequence Element	Value	Sequence Element	Value	Sequence Element	Value
C ₀	1	C ₃₂	-1	C ₆₄	1	C ₉₆	1
C ₁	-1	C ₃₃	1	C ₆₅	-1	C ₉₇	-1
C ₂	1	C ₃₄	-1	C ₆₆	1	C ₉₈	1
C ₃	1	C ₃₅	-1	C ₆₇	1	C ₉₉	1
C ₄	-1	C ₃₆	1	C ₆₈	-1	C ₁₀₀	-1
C ₅	-1	C ₃₇	1	C ₆₉	-1	C ₁₀₁	-1
C ₆	-1	C ₃₈	1	C ₇₀	-1	C ₁₀₂	-1
C ₇	1	C ₃₉	-1	C ₇₁	1	C ₁₀₃	1
C ₈	-1	C ₄₀	-1	C ₇₂	-1	C ₁₀₄	-1
C ₉	1	C ₄₁	1	C ₇₃	1	C ₁₀₅	1
C ₁₀	-1	C ₄₂	-1	C ₇₄	-1	C ₁₀₆	-1
C ₁₁	-1	C ₄₃	-1	C ₇₅	-1	C ₁₀₇	-1
C ₁₂	1	C ₄₄	1	C ₇₆	1	C ₁₀₈	1
C ₁₃	1	C ₄₅	1	C ₇₇	1	C ₁₀₉	1
C ₁₄	1	C ₄₆	1	C ₇₈	1	C ₁₁₀	1
C ₁₅	-1	C ₄₇	-1	C ₇₉	-1	C ₁₁₁	-1
C ₁₆	-1	C ₄₈	1	C ₈₀	-1	C ₁₁₂	-1
C ₁₇	1	C ₄₉	-1	C ₈₁	1	C ₁₁₃	1
C ₁₈	-1	C ₅₀	1	C ₈₂	-1	C ₁₁₄	-1
C ₁₉	-1	C ₅₁	1	C ₈₃	-1	C ₁₁₅	-1
C ₂₀	1	C ₅₂	-1	C ₈₄	1	C ₁₁₆	1
C ₂₁	1	C ₅₃	-1	C ₈₅	1	C ₁₁₇	1
C ₂₂	1	C ₅₄	-1	C ₈₆	1	C ₁₁₈	1
C ₂₃	-1	C ₅₅	1	C ₈₇	-1	C ₁₁₉	-1
C ₂₄	-1	C ₅₆	-1	C ₈₈	1	C ₁₂₀	1
C ₂₅	1	C ₅₇	1	C ₈₉	-1	C ₁₂₁	-1

C ₂₆	-1	C ₅₈	-1	C ₉₀	1	C ₁₂₂	1
C ₂₇	-1	C ₅₉	-1	C ₉₁	1	C ₁₂₃	1
C ₂₈	1	C ₆₀	1	C ₉₂	-1	C ₁₂₄	-1
C ₂₉	1	C ₆₁	1	C ₉₃	-1	C ₁₂₅	-1
C ₃₀	1	C ₆₂	1	C ₉₄	-1	C ₁₂₆	-1
C ₃₁	-1	C ₆₃	-1	C ₉₅	1	C ₁₂₇	1

16. (Previously Presented) The transceiver of claim 11, wherein the time domain sequence specifies Sequence Element and Value as follows:

Sequence Element	Value	Sequence Element	Value	Sequence Element	Value	Sequence Element	Value
C ₀	1	C ₃₂	-1	C ₆₄	-1	C ₉₆	1
C ₁	1	C ₃₃	-1	C ₆₅	-1	C ₉₇	1
C ₂	-1	C ₃₄	1	C ₆₆	1	C ₉₈	-1
C ₃	1	C ₃₅	-1	C ₆₇	-1	C ₉₉	1
C ₄	1	C ₃₆	-1	C ₆₈	-1	C ₁₀₀	1
C ₅	-1	C ₃₇	1	C ₆₉	1	C ₁₀₁	-1
C ₆	-1	C ₃₈	1	C ₇₀	1	C ₁₀₂	-1
C ₇	-1	C ₃₉	1	C ₇₁	1	C ₁₀₃	-1
C ₈	1	C ₄₀	1	C ₇₂	1	C ₁₀₄	-1
C ₉	1	C ₄₁	1	C ₇₃	1	C ₁₀₅	-1
C ₁₀	-1	C ₄₂	-1	C ₇₄	-1	C ₁₀₆	1
C ₁₁	1	C ₄₃	1	C ₇₅	1	C ₁₀₇	-1
C ₁₂	1	C ₄₄	1	C ₇₆	1	C ₁₀₈	-1
C ₁₃	-1	C ₄₅	-1	C ₇₇	-1	C ₁₀₉	1
C ₁₄	-1	C ₄₆	-1	C ₇₈	-1	C ₁₁₀	1
C ₁₅	-1	C ₄₇	-1	C ₇₉	-1	C ₁₁₁	1
C ₁₆	-1	C ₄₈	-1	C ₈₀	-1	C ₁₁₂	1
C ₁₇	-1	C ₄₉	-1	C ₈₁	-1	C ₁₁₃	1
C ₁₈	1	C ₅₀	1	C ₈₂	1	C ₁₁₄	-1
C ₁₉	-1	C ₅₁	-1	C ₈₃	-1	C ₁₁₅	1
C ₂₀	-1	C ₅₂	-1	C ₈₄	-1	C ₁₁₆	1
C ₂₁	1	C ₅₃	1	C ₈₅	1	C ₁₁₇	-1
C ₂₂	1	C ₅₄	1	C ₈₆	1	C ₁₁₈	-1
C ₂₃	1	C ₅₅	1	C ₈₇	1	C ₁₁₉	-1
C ₂₄	-1	C ₅₆	-1	C ₈₈	-1	C ₁₂₀	1
C ₂₅	-1	C ₅₇	-1	C ₈₉	-1	C ₁₂₁	1
C ₂₆	1	C ₅₈	1	C ₉₀	1	C ₁₂₂	-1
C ₂₇	-1	C ₅₉	-1	C ₉₁	-1	C ₁₂₃	1
C ₂₈	-1	C ₆₀	-1	C ₉₂	-1	C ₁₂₄	1
C ₂₉	1	C ₆₁	1	C ₉₃	1	C ₁₂₅	-1

C ₃₀	1	C ₆₂	1	C ₉₄	1	C ₁₂₆	-1
C ₃₁	1	C ₆₃	1	C ₉₅	1	C ₁₂₇	-1

17. (Previously Presented) The transceiver of claim 11, wherein the time domain sequence specifies Sequence Element and Value as follows:

Sequence Element	Value	Sequence Element	Value	Sequence Element	Value	Sequence Element	Value
C ₀	1	C ₃₂	-1	C ₆₄	1	C ₉₆	-1
C ₁	1	C ₃₃	-1	C ₆₅	1	C ₉₇	-1
C ₂	1	C ₃₄	-1	C ₆₆	1	C ₉₈	-1
C ₃	-1	C ₃₅	1	C ₆₇	-1	C ₉₉	1
C ₄	-1	C ₃₆	1	C ₆₈	-1	C ₁₀₀	1
C ₅	1	C ₃₇	-1	C ₆₉	1	C ₁₀₁	-1
C ₆	-1	C ₃₈	1	C ₇₀	-1	C ₁₀₂	1
C ₇	-1	C ₃₉	1	C ₇₁	-1	C ₁₀₃	1
C ₈	-1	C ₄₀	1	C ₇₂	1	C ₁₀₄	-1
C ₉	-1	C ₄₁	1	C ₇₃	1	C ₁₀₅	-1
C ₁₀	-1	C ₄₂	1	C ₇₄	1	C ₁₀₆	-1
C ₁₁	1	C ₄₃	-1	C ₇₅	-1	C ₁₀₇	1
C ₁₂	1	C ₄₄	-1	C ₇₆	-1	C ₁₀₈	1
C ₁₃	-1	C ₄₅	1	C ₇₇	1	C ₁₀₉	-1
C ₁₄	1	C ₄₆	-1	C ₇₈	-1	C ₁₁₀	1
C ₁₅	1	C ₄₇	-1	C ₇₉	-1	C ₁₁₁	1
C ₁₆	-1	C ₄₈	-1	C ₈₀	-1	C ₁₁₂	-1
C ₁₇	-1	C ₄₉	-1	C ₈₁	-1	C ₁₁₃	-1
C ₁₈	-1	C ₅₀	-1	C ₈₂	-1	C ₁₁₄	-1
C ₁₉	1	C ₅₁	1	C ₈₃	1	C ₁₁₅	1
C ₂₀	1	C ₅₂	1	C ₈₄	1	C ₁₁₆	1
C ₂₁	-1	C ₅₃	-1	C ₈₅	-1	C ₁₁₇	-1
C ₂₂	1	C ₅₄	1	C ₈₆	1	C ₁₁₈	1
C ₂₃	1	C ₅₅	1	C ₈₇	1	C ₁₁₉	1
C ₂₄	1	C ₅₆	-1	C ₈₈	-1	C ₁₂₀	1
C ₂₅	1	C ₅₇	-1	C ₈₉	-1	C ₁₂₁	1
C ₂₆	1	C ₅₈	-1	C ₉₀	-1	C ₁₂₂	1
C ₂₇	-1	C ₅₉	1	C ₉₁	1	C ₁₂₃	-1
C ₂₈	-1	C ₆₀	1	C ₉₂	1	C ₁₂₄	-1
C ₂₉	1	C ₆₁	-1	C ₉₃	-1	C ₁₂₅	1
C ₃₀	-1	C ₆₂	1	C ₉₄	1	C ₁₂₆	-1
C ₃₁	-1	C ₆₃	1	C ₉₅	1	C ₁₂₇	-1

18. (Previously Presented) The transceiver of claim 9, wherein the third sequence comprises multiple copies of the first sub-sequence combined with a guard band.
19. (Previously Presented) The transceiver of claim 18, wherein the third sequence comprises multiple copies of the first sub-sequence with a postpended guard band and a prepended sequence.
20. (Previously Presented) The transceiver of claim 19, wherein the third sequence comprises twenty one (21) copies of the first sub-sequence with a postpended guard band and a prepended sequence.
21. (Previously Presented) The transceiver of claim 19, wherein the third sequence comprises nine (9) copies of the first sub-sequence with a postpended guard band and a prepended sequence.
22. (Previously Presented) The transceiver of claim 19, wherein the guard band comprises a sequence of five (5) zero samples.
23. (Previously Presented) The transceiver of claim 19, wherein the prepended sequence is a zero-padded sequence.
24. (Previously Presented) The transceiver of claim 19, wherein the prepended sequence is a cyclic prefix.
25. (Previously Presented) The transceiver of claim 9, wherein the fourth sequence comprises multiple copies of the fifth sequence combined with a guard band.

26. (Previously Presented) The transceiver of claim 25, wherein the fourth sequence comprises three (3) copies of the fifth sequence with a postpended guard band and a prepended sequence.
27. (Previously Presented) The transceiver of claim 9, wherein the third sequence comprises multiple concatenated copies of the first sub-sequence, wherein the fourth sequence comprises multiple concatenated copies of the fifth sequence, and wherein the third and fourth sequences are interleaved.
28. (Previously Presented) The transceiver of claim 27, wherein the preamble is used in a communications system that changes transmit frequency based on a transmit code, and wherein the length of the interleaved third and fourth sequence is an integer multiple of a period of the transmit code.
29. (Previously Presented) The transceiver of claim 9, wherein the wireless communications system uses orthogonal frequency division multiple access.
30. (Previously Presented) The transceiver of claim 29, wherein the wireless communications system is a time-frequency interleaved, orthogonal frequency division multiple access communications system.
31. (Previously Presented) The transceiver of claim 9, wherein the preamble can be transformed prior to transmission.
32. (Previously Presented) The transceiver of claim 31, wherein the transformation comprises a time-domain filtering.

33. (Previously Presented) The transceiver of claim 31, wherein the transformation comprises:

- a first domain conversion;
- processing the domain converted preamble; and
- a second domain conversion.

34. (Currently Amended) A transceiver for a wireless communications system ~~comprising a transmitter configured to generate a preamble comprising:~~ comprising:

a transmitter comprising preamble transmission circuitry, the preamble comprising a sequence wherein the sequence comprises a concatenation of a first set of sub-sequences, with each sub-sequence containing a specified number of ~~zeroes;~~ zeroes, ~~wherein the preamble can be transformed prior to transmission~~ and wherein each sub-sequence can differ depending upon its position in the ~~preamble;~~ preamble;

a memory for storing a program;

a processor for executing the program stored in the memory; and

the program for transforming the preamble prior to transmission, the program including

instructions for a first domain conversion;

instructions for processing the domain converted preamble; and

instructions for a second domain conversion, wherein the processing comprises magnitude clipping, and wherein the time domain sequence after the second domain conversion is specified as follows:

Sequence Element	Value	Sequence Element	Value	Sequence Element	Value	Sequence Element	Value
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C ₀	0.6564	C ₃₂	-0.0844	C ₆₄	-0.2095	C ₉₆	0.4232
C ₁	-1.3671	C ₃₃	1.1974	C ₆₅	1.1640	C ₉₇	-1.2684
C ₂	-0.9958	C ₃₄	1.2261	C ₆₆	1.2334	C ₉₈	-1.8151
C ₃	-1.3981	C ₃₅	1.4401	C ₆₇	1.5338	C ₉₉	-1.4829
C ₄	0.8481	C ₃₆	-0.5988	C ₆₈	-0.8844	C ₁₀₀	1.0302
C ₅	1.0892	C ₃₇	-0.4675	C ₆₉	-0.3857	C ₁₀₁	0.9419
C ₆	-0.8621	C ₃₈	0.8520	C ₇₀	0.7730	C ₁₀₂	-1.1472
C ₇	1.1512	C ₃₉	-0.8922	C ₇₁	-0.9754	C ₁₀₃	1.4858
C ₈	0.9602	C ₄₀	-0.5603	C ₇₂	-0.2315	C ₁₀₄	-0.6794
C ₉	-1.3581	C ₄₁	1.1886	C ₇₃	0.5579	C ₁₀₅	0.9573
C ₁₀	-0.8354	C ₄₂	1.1128	C ₇₄	0.4035	C ₁₀₆	1.0807
C ₁₁	-1.3249	C ₄₃	1.0833	C ₇₅	0.4248	C ₁₀₇	1.1445
C ₁₂	1.0964	C ₄₄	-0.9073	C ₇₆	-0.3359	C ₁₀₈	-1.2312
C ₁₃	1.3334	C ₄₅	-1.6227	C ₇₇	-0.9914	C ₁₀₉	-0.6643
C ₁₄	-0.7378	C ₄₆	1.0013	C ₇₈	0.5975	C ₁₁₀	0.3836
C ₁₅	1.3565	C ₄₇	-1.6067	C ₇₉	-0.8408	C ₁₁₁	-1.1482
C ₁₆	0.9361	C ₄₈	0.3360	C ₈₀	0.3587	C ₁₁₂	-0.0353
C ₁₇	-0.8212	C ₄₉	-1.3136	C ₈₁	-0.9604	C ₁₁₃	-0.6747
C ₁₈	-0.2662	C ₅₀	-1.4448	C ₈₂	-1.0002	C ₁₁₄	-1.1653
C ₁₉	-0.6866	C ₅₁	-1.7238	C ₈₃	-1.1636	C ₁₁₅	-0.8896
C ₂₀	0.8437	C ₅₂	1.0287	C ₈₄	0.9590	C ₁₁₆	0.2414
C ₂₁	1.1237	C ₅₃	0.6100	C ₈₅	0.7137	C ₁₁₇	0.1160
C ₂₂	-0.3265	C ₅₄	-0.9237	C ₈₆	-0.6776	C ₁₁₈	-0.6987
C ₂₃	1.0511	C ₅₅	1.2618	C ₈₇	0.9824	C ₁₁₉	0.4781
C ₂₄	0.7927	C ₅₆	0.5974	C ₈₈	-0.5454	C ₁₂₀	0.1821
C ₂₅	-0.3363	C ₅₇	-1.0976	C ₈₉	1.1022	C ₁₂₁	-1.0672
C ₂₆	-0.1342	C ₅₈	-0.9776	C ₉₀	1.6485	C ₁₂₂	-0.9676
C ₂₇	-0.1546	C ₅₉	-0.9982	C ₉₁	1.3307	C ₁₂₃	-1.2321
C ₂₈	0.6955	C ₆₀	0.8967	C ₉₂	-1.2852	C ₁₂₄	0.5003
C ₂₉	1.0608	C ₆₁	1.7640	C ₉₃	-1.2659	C ₁₂₅	0.7419
C ₃₀	-0.1600	C ₆₂	-1.0211	C ₉₄	0.9435	C ₁₂₆	-0.8934
C ₃₁	0.9442	C ₆₃	1.6913	C ₉₅	-1.6809	C ₁₂₇	0.8391

35. (Previously Presented) The transceiver of claim 33, wherein the processing comprises magnitude clipping, and wherein the time domain sequence after the second domain conversion is specified as follows:

Sequence Element	Value	Sequence Element	Value	Sequence Element	Value	Sequence Element	Value
C ₀	0.9679	C ₃₂	-1.2905	C ₆₄	1.5280	C ₉₆	0.5193

C ₁	-1.0186	C ₃₃	1.1040	C ₆₅	-0.9193	C ₉₇	-0.3439
C ₂	0.4883	C ₃₄	-1.2408	C ₆₆	1.1246	C ₉₈	0.1428
C ₃	0.5432	C ₃₅	-0.8062	C ₆₇	1.2622	C ₉₉	0.6251
C ₄	-1.4702	C ₃₆	1.5425	C ₆₈	-1.4406	C ₁₀₀	-1.0468
C ₅	-1.4507	C ₃₇	1.0955	C ₆₉	-1.4929	C ₁₀₁	-0.5798
C ₆	-1.1752	C ₃₈	1.4284	C ₇₀	-1.1508	C ₁₀₂	-0.8237
C ₇	-0.0730	C ₃₉	-0.4593	C ₇₁	0.4126	C ₁₀₃	0.2667
C ₈	-1.2445	C ₄₀	-1.0408	C ₇₂	-1.0462	C ₁₀₄	-0.9563
C ₉	0.3143	C ₄₁	1.0542	C ₇₃	0.7232	C ₁₀₅	0.6016
C ₁₀	-1.3951	C ₄₂	-0.4446	C ₇₄	-1.1574	C ₁₀₆	-0.9964
C ₁₁	-0.9694	C ₄₃	-0.7929	C ₇₅	-0.7102	C ₁₀₇	-0.3541
C ₁₂	0.4563	C ₄₄	1.6733	C ₇₆	0.8502	C ₁₀₈	0.3965
C ₁₃	0.3073	C ₄₅	1.7568	C ₇₇	0.6260	C ₁₀₉	0.5201
C ₁₄	0.6408	C ₄₆	1.3273	C ₇₈	0.9530	C ₁₁₀	0.4733
C ₁₅	-0.9798	C ₄₇	-0.2465	C ₇₉	-0.4971	C ₁₁₁	-0.2362
C ₁₆	-1.4116	C ₄₈	1.6850	C ₈₀	-0.8633	C ₁₁₂	-0.6892
C ₁₇	0.6038	C ₄₉	-0.7091	C ₈₁	0.6910	C ₁₁₃	0.4787
C ₁₈	-1.3860	C ₅₀	1.1396	C ₈₂	-0.3639	C ₁₁₄	-0.2605
C ₁₉	-1.0888	C ₅₁	1.5114	C ₈₃	-0.8874	C ₁₁₅	-0.5887
C ₂₀	1.1036	C ₅₂	-1.4343	C ₈₄	1.5311	C ₁₁₆	0.9411
C ₂₁	0.7067	C ₅₃	-1.5005	C ₈₅	1.1546	C ₁₁₇	0.7364
C ₂₂	1.1667	C ₅₄	-1.2572	C ₈₆	1.1935	C ₁₁₈	0.6714
C ₂₃	-1.0225	C ₅₅	0.8274	C ₈₇	-0.2930	C ₁₁₉	-0.1746
C ₂₄	-1.2471	C ₅₆	-1.5140	C ₈₈	1.3285	C ₁₂₀	1.1776
C ₂₅	0.7788	C ₅₇	1.1421	C ₈₉	-0.7231	C ₁₂₁	-0.8803
C ₂₆	-1.2716	C ₅₈	-1.0135	C ₉₀	1.2832	C ₁₂₂	1.2542
C ₂₇	-0.8745	C ₅₉	-1.0657	C ₉₁	0.7878	C ₁₂₃	0.5111
C ₂₈	1.2175	C ₆₀	1.4073	C ₉₂	-0.8095	C ₁₂₄	-0.8209
C ₂₉	0.8419	C ₆₁	1.8196	C ₉₃	-0.7463	C ₁₂₅	-0.8975
C ₃₀	1.2881	C ₆₂	1.1679	C ₉₄	-0.8973	C ₁₂₆	-0.9091
C ₃₁	-0.8210	C ₆₃	-0.4131	C ₉₅	0.5560	C ₁₂₇	0.2562

36. (Previously Presented) The transceiver of claim 33, wherein the processing comprises magnitude clipping, and wherein the time domain sequence after the second domain conversion is specified as follows:

Sequence Element	Value	Sequence Element	Value	Sequence Element	Value	Sequence Element	Value
C ₀	0.4047	C ₃₂	-0.9671	C ₆₄	-0.7298	C ₉₆	0.2424
C ₁	0.5799	C ₃₃	-0.9819	C ₆₅	-0.9662	C ₉₇	0.5703
C ₂	-0.3407	C ₃₄	0.7980	C ₆₆	0.9694	C ₉₈	-0.6381

C ₃	0.4343	C ₃₅	-0.8158	C ₆₇	-0.8053	C ₉₉	0.7861
C ₄	0.0973	C ₃₆	-0.9188	C ₆₈	-0.9052	C ₁₀₀	0.9175
C ₅	-0.7637	C ₃₇	1.5146	C ₆₉	1.5933	C ₁₀₁	-0.4595
C ₆	-0.6181	C ₃₈	0.8138	C ₇₀	0.8418	C ₁₀₂	-0.2201
C ₇	-0.6539	C ₃₉	1.3773	C ₇₁	1.5363	C ₁₀₃	-0.7755
C ₈	0.3768	C ₄₀	0.2108	C ₇₂	0.3085	C ₁₀₄	-0.2965
C ₉	0.7241	C ₄₁	0.9245	C ₇₃	1.3016	C ₁₀₅	-1.1220
C ₁₀	-1.2095	C ₄₂	-1.2138	C ₇₄	-1.5546	C ₁₀₆	1.7152
C ₁₁	0.6027	C ₄₃	1.1252	C ₇₅	1.5347	C ₁₀₇	-1.2756
C ₁₂	0.4587	C ₄₄	0.9663	C ₇₆	1.0935	C ₁₀₈	-0.7731
C ₁₃	-1.3879	C ₄₅	-0.8418	C ₇₇	-0.8978	C ₁₀₉	1.0724
C ₁₄	-1.0592	C ₄₆	-0.6811	C ₇₈	-0.9712	C ₁₁₀	1.1733
C ₁₅	-1.4052	C ₄₇	-1.3003	C ₇₉	-1.3763	C ₁₁₁	1.4711
C ₁₆	-0.8439	C ₄₈	-0.3397	C ₈₀	-0.6360	C ₁₁₂	0.4881
C ₁₇	-1.5992	C ₄₉	-1.1051	C ₈₁	-1.2947	C ₁₁₃	0.7528
C ₁₈	1.1975	C ₅₀	1.2400	C ₈₂	1.6436	C ₁₁₄	-0.6417
C ₁₉	-1.9525	C ₅₁	-1.3975	C ₈₃	-1.6564	C ₁₁₅	1.0363
C ₂₀	-1.5141	C ₅₂	-0.7467	C ₈₄	-1.1981	C ₁₁₆	0.8002
C ₂₁	0.7219	C ₅₃	0.2706	C ₈₅	0.8719	C ₁₁₇	-0.0077
C ₂₂	0.6982	C ₅₄	0.7294	C ₈₆	0.9992	C ₁₁₈	-0.2336
C ₂₃	1.2924	C ₅₅	0.7444	C ₈₇	1.4872	C ₁₁₉	-0.4653
C ₂₄	-0.9460	C ₅₆	-0.3970	C ₈₈	-0.4586	C ₁₂₀	0.6862
C ₂₅	-1.2407	C ₅₇	-1.0718	C ₈₉	-0.8404	C ₁₂₁	1.2716
C ₂₆	0.4572	C ₅₈	0.6646	C ₉₀	0.6982	C ₁₂₂	-0.8880
C ₂₇	-1.2151	C ₅₉	-1.1037	C ₉₁	-0.7959	C ₁₂₃	1.4011
C ₂₈	-0.9869	C ₆₀	-0.5716	C ₉₂	-0.5692	C ₁₂₄	0.9531
C ₂₉	1.2792	C ₆₁	0.9001	C ₉₃	1.3528	C ₁₂₅	-1.1210
C ₃₀	0.6882	C ₆₂	0.7317	C ₉₄	0.9536	C ₁₂₆	-0.9489
C ₃₁	1.2586	C ₆₃	0.9846	C ₉₅	1.1784	C ₁₂₇	-1.2566

37. (Previously Presented) The transceiver of claim 33, wherein the processing comprises magnitude clipping, and wherein the time domain sequence after the second domain conversion is specified as follows:

Sequence Element	Value	Sequence Element	Value	Sequence Element	Value	Sequence Element	Value
C ₀	1.1549	C ₃₂	-1.2385	C ₆₄	1.3095	C ₉₆	-1.0094
C ₁	1.0079	C ₃₃	-0.7883	C ₆₅	0.6675	C ₉₇	-0.7598
C ₂	0.7356	C ₃₄	-0.7954	C ₆₆	1.2587	C ₉₈	-1.0786
C ₃	-0.7434	C ₃₅	1.0874	C ₆₇	-0.9993	C ₉₉	0.6699
C ₄	-1.3930	C ₃₆	1.1491	C ₆₈	-1.0052	C ₁₀₀	0.9813

C ₅	1.2818	C ₃₇	-1.4780	C ₆₉	0.6601	C ₁₀₁	-0.5563
C ₆	-1.1033	C ₃₈	0.8870	C ₇₀	-1.0228	C ₁₀₂	1.0548
C ₇	-0.2523	C ₃₉	0.4694	C ₇₁	-0.7489	C ₁₀₃	0.8925
C ₈	-0.7905	C ₄₀	1.5066	C ₇₂	0.5086	C ₁₀₄	-1.3656
C ₉	-0.4261	C ₄₁	1.1266	C ₇₃	0.1563	C ₁₀₅	-0.8472
C ₁₀	-0.9390	C ₄₂	0.9935	C ₇₄	0.0673	C ₁₀₆	-1.3110
C ₁₁	0.4345	C ₄₃	-1.2462	C ₇₅	-0.8375	C ₁₀₇	1.1897
C ₁₂	0.4433	C ₄₄	-1.7869	C ₇₆	-1.0746	C ₁₀₈	1.5127
C ₁₃	-0.3076	C ₄₅	1.7462	C ₇₇	0.4454	C ₁₀₉	-0.7474
C ₁₄	0.5644	C ₄₆	-1.4881	C ₇₈	-0.7831	C ₁₁₀	1.4678
C ₁₅	0.2571	C ₄₇	-0.4090	C ₇₉	-0.3623	C ₁₁₁	1.0295
C ₁₆	-1.0030	C ₄₈	-1.4694	C ₈₀	-1.3658	C ₁₁₂	-0.9210
C ₁₇	-0.7820	C ₄₉	-0.7923	C ₈₁	-1.0854	C ₁₁₃	-0.4784
C ₁₈	-0.4064	C ₅₀	-1.4607	C ₈₂	-1.4923	C ₁₁₄	-0.5022
C ₁₉	0.9034	C ₅₁	0.9113	C ₈₃	0.4233	C ₁₁₅	1.2153
C ₂₀	1.5406	C ₅₂	0.8454	C ₈₄	0.6741	C ₁₁₆	1.5783
C ₂₁	-1.4613	C ₅₃	-0.8866	C ₈₅	-1.0157	C ₁₁₇	-0.7718
C ₂₂	1.2745	C ₅₄	0.8852	C ₈₆	0.8304	C ₁₁₈	1.2384
C ₂₃	0.3715	C ₅₅	0.4918	C ₈₇	0.4878	C ₁₁₉	0.6695
C ₂₄	1.8134	C ₅₆	-0.6096	C ₈₈	-1.4992	C ₁₂₀	0.8821
C ₂₅	0.9438	C ₅₇	-0.4321	C ₈₉	-1.1884	C ₁₂₁	0.7807
C ₂₆	1.3130	C ₅₈	-0.1327	C ₉₀	-1.4008	C ₁₂₂	1.0537
C ₂₇	-1.3070	C ₅₉	0.4953	C ₉₁	0.7795	C ₁₂₃	-0.0791
C ₂₈	-1.3462	C ₆₀	0.9702	C ₉₂	1.2926	C ₁₂₄	-0.2845
C ₂₉	1.6868	C ₆₁	-0.8667	C ₉₃	-1.2049	C ₁₂₅	0.5790
C ₃₀	-1.2153	C ₆₂	0.6803	C ₉₄	1.2934	C ₁₂₆	-0.4664
C ₃₁	-0.6778	C ₆₃	-0.0244	C ₉₅	0.8123	C ₁₂₇	-0.1097

38. (Currently Amended) The transceiver of claim 31, wherein the preamble can be transformed prior to use. ~~use and stored in a memory.~~

39-57. (Canceled)